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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,006	02/16/2001	Aaron Schoenfeld	303.259US3	5063
7590 10/07/2003 SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. Box 2938 Minneapolis, MN 55402			EXAMINER PERT, EVAN T	
			ART UNIT 2829	PAPER NUMBER

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/785,006

Applicant(s)

SCHOENFELD, AARON *u*

Examiner

Evan Pert

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-25, 35-39 and 41-43 is/are pending in the application.
- 4a) Of the above claim(s) 11-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-25, 35-39 and 41-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's Response to Office Action Mailed 6-20-03

1. Applicant's faxed response is noted as accurate. This Office Action supercedes the Office Action mailed 6-20-03.

Election/Restrictions

2. Applicant's election without traverse of Species I in Paper No. 17 is acknowledged. Accordingly, claims 11-17 are withdrawn from consideration as being drawn to non-elected Species II (shown pictorially in paper 16).

Claim Rejections - 35 USC § 112, 2nd paragraph

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 18-25, 35-39, and 41-43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant uses the product-by-process limitation "ground or polished," but fails to set forth a clear scope of meaning for a *device* edge surface that was "ground or polished" [see MPEP 2113].

According to Merriam-Webster, the act of "grinding" is an act of "wearing down or polishing by friction" or "reducing to powder by friction." Therefore, the act of *cutting* a wafer with a dicing saw is an act of *cutting* by *grinding* wafer scribe material.

U.S. Patent 5,314,844 describes three methods for dicing "well known in the art" applicable to III-V semiconductor wafers [such as applicant's "GaAs" per p. 6, line 25], as well as silicon [col. 1]. The '844 patent indicates:

The advantages of the [high speed] dicing saw method lies in the fact that the method provides stable width of cut. Further, there are little cracks or chipping caused, and the cutting takes place at high speed, and is thus preferable in a mass production. [emphasis added].

Applicant says there are typically "irregularities 24" (Fig. 2 + p. 6, line 6) when applicant cuts a die before "grinding or polishing" sides of the die, but well known dicing saw cutting results in "a stable width of cut" per the '844 patent. The cut surface in '844 is indistinguishable from applicant's claimed cut surface since applicant can admittedly only realistically "reduce" the irregularities anyways [e.g. p. 7, line 5].

Applicant describes, "treating" the sides of the die to cause a "removing" of extra scribe material and "irregularities 24." After applicant removes material and irregularities 24, the sides of the die do not have irregularities 24 *shown* (Fig. 3).

Yet, applicant fails to quantify the "irregularities" resulting from applicant's cut, or *any* quantifiable surface uniformity characteristics of die sides that are observable after subsequent grinding or polishing.

Based on the '844 evidence presented by the examiner, applicant's claimed "ground or polished" die side is indistinguishable from a die side resulting from a well known clean precise dicing saw grinding cut.

Even applicant's admission of prior art says: "each die is precisely cut from the wafer" [p. 1, lines 21-22, emphasis added].

Specification

4. The specification is objected to for lack of enablement for "polishing" a bi-level edge die to get "polished" bi-level edges, without a tendency for damage.

Claim Rejections - 35 USC § 112, 1st paragraph

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 39 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Claim 39 indicates some kind of "polishing" to get a "polished" side of a die, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make the claimed die.

U.S. Patent 5,196,378 explains the problem with *polishing* a die edge:

Although edge roughness may be smoothed somewhat by polishing after dicing, the polishing process and fixturing requirements of the polishing process tend to damage the electrically active layer near the die edge [col. 2].

Applicant fails to provide written description and explanation of how to overcome the problem of polishing a die side as taught in prior art '378. The generalized and generic description at the end of applicant's disclosure does not adequately describe how to overcome the problem of polishing a die side, particularly when it has a "bi-level edge" as in the instant claims:

The act of "polishing to get a polished side of a die" tends to cause damage for a regular-sided die according to the '378 patent. Applicant claims a *polished bi-level* die, which has two stepped edges that need polishing, which is even more difficult than a regular die.

So how does one of ordinary skill resolve the problem of damage identified in the prior art '378?

Applicant says you can use CMP with tweezers and a slurry [p. 8], but well known CMP does not give a "bi-level edge." As described by applicant's own disclosure, polishing and grinding (such as by well known CMP) is for planarizing entire wafers [p. 1, lines 15-17]. Applicant doesn't even acknowledge a problem with polishing a die edge since "the invention is not limited to a particular process of performing the grinding technique of the invention" [p. 8, lines 19-20].

6. Claims 17-25, 35-38, and 41-43 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "grinding to get a ground edge," does not reasonably provide enablement for "polishing a bi-level edge to get a polished bi-level edge." The specification does not enable any person skilled in the art to construct the invention commensurate in scope with these claims, as indicated in the rejection of claim 39 above.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 18-25, 35-38 and 41-43 are rejected under 35 U.S.C. 102(e) as being *clearly anticipated* by Boruta (U.S. 5,786,266), *in view of* the rejections under 35 USC 112, 2nd paragraph above.

Figure 2D with col. 1 and 3 of Boruta *clearly anticipates* all limitations of the rejected claims *except* for calling the die edges "ground or polished." Notably, Boruta does not show any "irregularities" at the die edges, so limitations of "to remove irregularities" and so forth do not bare significant patentable weight for the pending *product* claims.

Per the rejection under 35 USC 112, 2nd paragraph, the ground-cut side-of-the-die edges in Fig. 2D of Boruta are indistinguishable from applicant's so-called "ground or polished" edges.

Response to Arguments

9. Applicant's argument with respect to rejections under 35 USC 112 for the lack of a clear scope of a "ground or polished" die side surface is not persuasive [paper 15, pages 5-6]. Applicant presents spurious case law and argues the specification talks about potential irregularities from cutting compared to grinding and polishing, which are method steps. Applicant's argument does not clarify the scope of a structure that was subjected to a method of grinding or a polishing.

10. Applicant's other arguments with respect to claims 18-25, 35-39 and 41-43 have been considered but are moot in view of the new grounds of rejection.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. 6,215,172 is cited as a result of a parent case and having overlapping subject matter, but the examiner refrains from determining statutory and/or non-statutory double-patenting rejections, pending applicant's response to the outstanding rejections of this Office Action.

U.S. 5,747,365 is cited for teaching "grinding a die edge" relevant to non-elected Species II. No "irregularities" are shown.

U.S. 5,706,176 is cited for teaching "planar beveling" at the edges of chips that are precise and smooth for abutting chips together.

U.S. 4,814,296 is cited for teaching a bi-level edge of a die resulting from a grinding cut of a dicing saw. No "irregularities" are shown.

U.S. 4,604,161 is cited for teaching a bi-level edge of a die that has two planar surfaces that are not parallel with each other. No "irregularities" are shown.

U.S. 4,542,397 is cited for teaching atomically smooth die edges for abutting die together (relevant to Species II).

JP 60-157236 is cited for teaching a bi-level die edge resulting from a grinding front cut and grinding back cut using two blade widths. No "irregularities" are shown.

JP 60-74642 is cited for teaching a double cut that results in a bi-level edge of a die.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evan Pert whose telephone number is 703-306-5689.

The examiner can normally be reached on M-F (7:30AM-3:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 703-308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.

ETP
September 24, 2003



EVAN PERT
PRIMARY EXAMINER